FEEDBACK TO CALL FOR EVIDENCE

ECODESIGN AND ENERGY LABELLING – ELECTRONIC DISPLAYS (REVIEW OF REQUIREMENTS)

September 21, 2023

ECOS, Deutsche Umwelthilfe, IFixIt, and the Coolproducts campaign welcome the publication of the call for evidence for an impact assessment on the review of the eco-design and energy labelling requirements for electronic displays. We strongly support the assessment which has been done of the problems that this review should tackle, particularly concerning the scope of the regulation, the balance of stringency between larger and smaller products, the lack of information to consumers, the room for improvement concerning material efficiency and the limitation of substances of concern.

Our feedback to the call for evidence contains both relevant information about the way eco-design and energy labelling requirements for electronic displays are currently implemented, as well as recommendations on how to solve the problems identified by the call for evidence.

I. SCOPE

In its call for evidence, the Commission expresses the intention to extend the scope of the ecodesign and energy labelling regulations for electronic displays. This extension would consider signage displays. We strongly support this initiative.

To maximise the energy and resource savings resulting from this regulation, we encourage the Commission to go further and integrate the following types of electronic displays in the scope:

- Integrated displays
- Digital photo frames
- Professional, broadcast and security displays

1. SIGNAGE DISPLAYS

Signage displays were identified 7 years ago in the Ecodesign and Energy Labelling Working Plan 2016-2019 as a product worth being investigated. The Commission actually committed to have the regulation of this product group taken up in the previous revision of the current implementing Ecodesign measures for electronic displays. However, it was eventually decided to not apply energy efficiency requirements to signage displays. Therefore, we call on the Commission to finally walk the talk and revise the ecodesign requirements to integrate signage displays in the scope of the energy efficiency requirements and remove all the exemptions associated with this category of products.

It is high time for this energy guzzling category of products to be covered by ambitious energy efficiency requirements. As calculated by Adblock Bristol[1], the electricity used by just one double-sided bus stop advert unit is more than 4 times that needed to power the average household.

2. INTEGRATED DISPLAYS

In terms of the end-of-life processing of displays, there is little difference between an integrated display and a standalone display. Both types of displays should be included within the scope of the material efficiency requirements of the Ecodesign regulation. We strongly disagree with tackling this issue on a product-by-product basis.

3. DIGITAL PHOTO FRAMES (DPFS)

There is no technical reason why DPFs should not comply with the energy and resource efficiency requirements of the regulations. The current definition depends on DPFs being "conceived to display exclusively still visual information". This means that digital photo frames that display video as well as static images are considered as being within the scope already.

4. PROFESSIONAL, BROADCAST AND SECURITY DISPLAYS

As for signage displays, these types of displays benefit from an exemption for energy efficiency ecodesign requirements. There is no technical reason why they should not comply with the energy requirements of the regulations and should therefore be added to the scope.

II. SCOPE OF ACTORS AND OBLIGATIONS

Online platforms and fulfillment service providers play a crucial role in ensuring compliance with environmental and consumer protection regulations for imaging equipment within the EU. Online platforms must check whether there is a liable actor in the EU who guarantees compliance with the environmental requirements of the implementing act on electronic displays. Furthermore, online platforms must check whether the obligations of manufacturers and distributors are being met (e.g. energy label availability, comprehensive information for consumers, provision of spare parts, etc.) before a product is put online for sale. Fulfilment service providers must be subject to similar obligations. If no such checking obligations are set, massive amounts of illegal products will keep on being imported into the EU market.

III. ENERGY EFFICIENCY

1. LUMINANCE LIMITS

Analysis of EPREL test reports suggests the current regulatory approach to set minimum luminance limits for the default TV mode and power testing is being inconsistently applied by manufacturers:

- Luminance is being misreported in EPREL test reports – Figure 1 shows a large cluster of TVs with a declared luminance of exactly 100.0 and 120.0lm. This is highly improbable and independent testing undertaken in 2023 in the UK of a limited number of these models shows the actual luminance is more than twice the level.

- Luminance of many 4k electronic displays is much higher than the minimum levels – Figure 2 excludes the misreported datapoints and shows luminance is reaching over 400lm in default mode (blue) and the

[1] Adfree Cities (2019) - The electricity cost of digital adverts – Available here

associated energy efficiency index (EEI) levels. If manufacturers chose to reduce the luminance to 220lm, then EEI values could be reduced by 20%. This is shown by the gold circles in Figure 2 which have been interpolated from the EPREL test report data. This suggests the label is not effective in incentivising manufacturers to reduce the power demand of their TVs and contributes to the majority of TVs being distributed within a small range of energy label classes.

- Conversely, 8K TVs are reducing the luminance below 200lm in order to meet the EEI 0.9 MEPS (Minimum Energy Performance Standards) threshold (Figure 3). This is misleading for the consumer who is likely to increase the luminance level, leading to increased power and EEI levels closer to those shown by the gold circles.

A review of test methods for IEA 4E PEET found that the ANSI/CTA 2037-D was a more effective test method because it simultaneously measured power and screen luminance during playback of the standard video test clip. However, revisions are needed to ensure the test method is suitable for all types of electronic displays. Furthermore, a compatible, simplified test method should be developed to allow for rapid screening of displays by market surveillance authorities, whose resources are too limited to undertake full testing at scale.

Figure 1

EEI and luminance of 2022-2023 mid to high-end TVs in default TV mode as declared in EPREL test reports

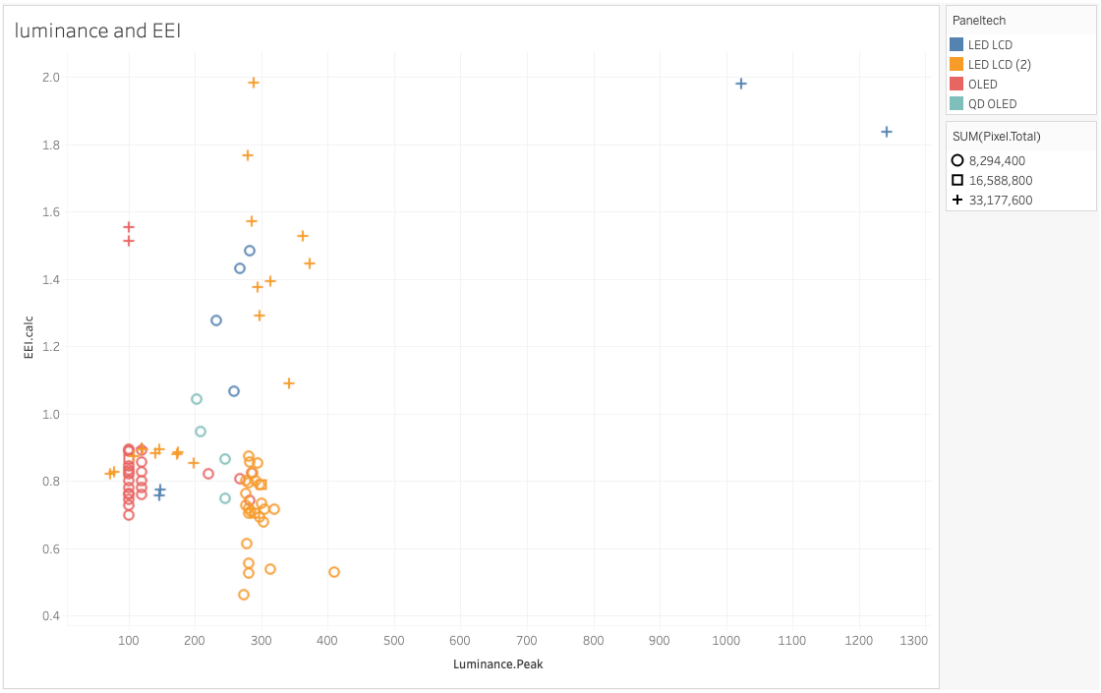


Figure 2

EEI and luminance of 2022-2023 mid to high-end 4K TVs in default TV mode as declared in EPREL test reports and interpolated @220lm

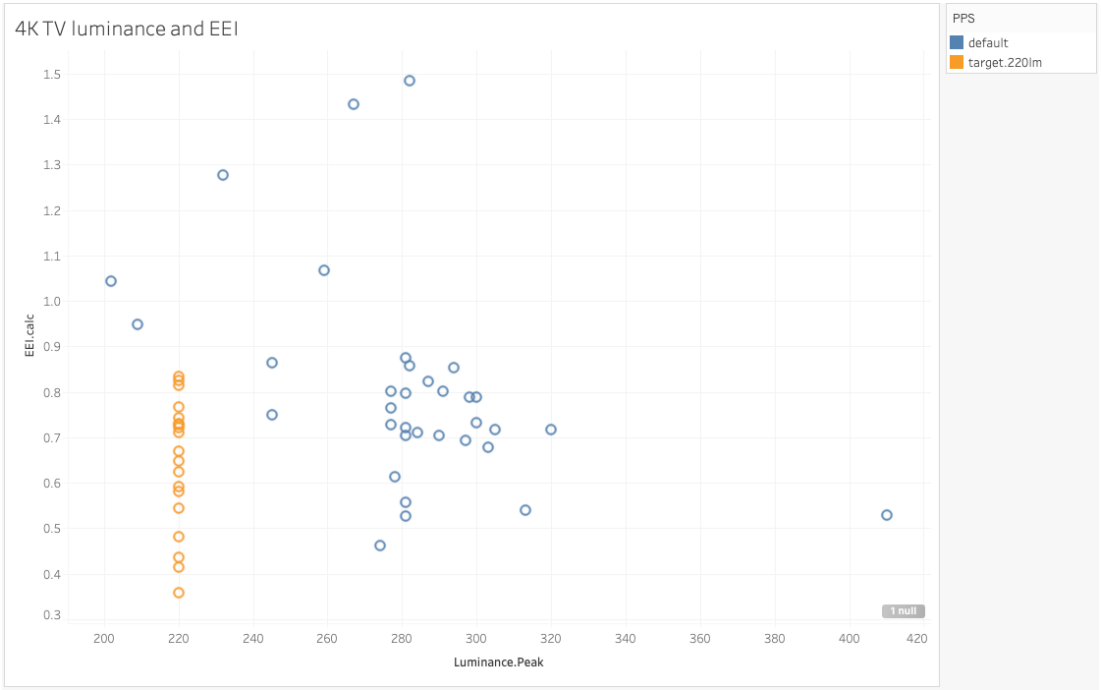
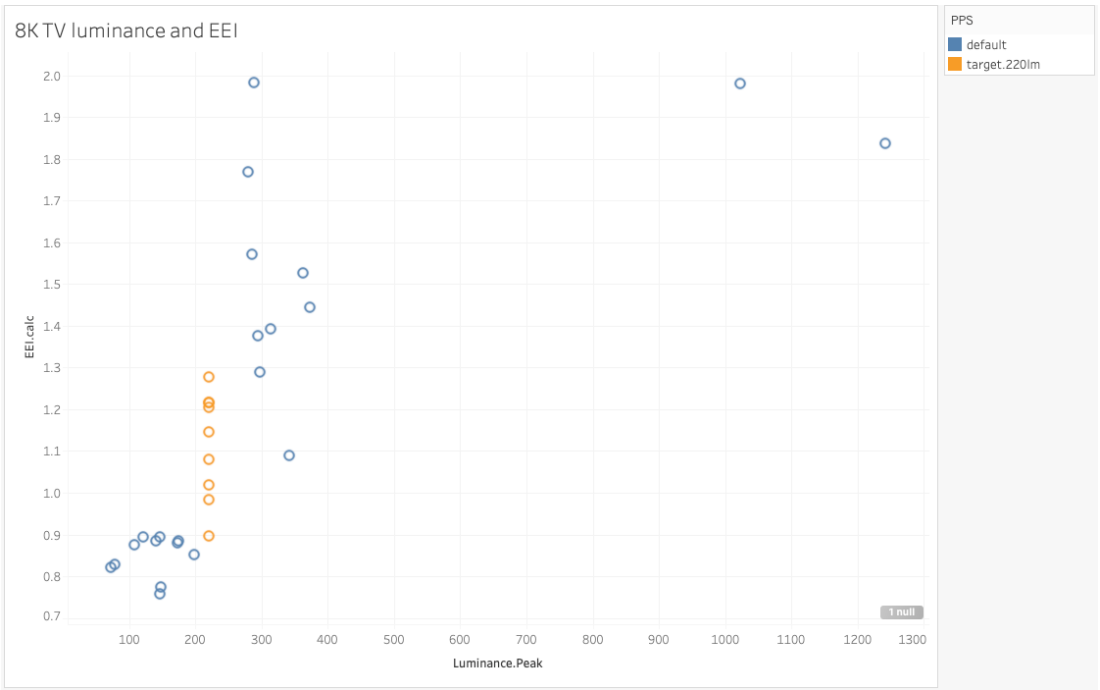


Figure 3

EEI and luminance of 2022-2023 8K TVs in default TV mode as declared in EPREL test reports and interpolated @220lm



2. ENERGY LABEL FAILING TO EMPOWER CONSUMERS TO MAKE ENERGY CONSCIOUS PURCHASING CHOICES

By setting the initial distribution of TVs at the lowest classes, consumers were unable to make a distinction between 'good'/green labelled and 'bad'/red labelled products. This was justified by the need to encourage manufacturers to make efforts in trying to reach higher classes.

Unfortunately, this has not changed until now with the EPREL tool showing that 75% of the TVs are spread between the F and G classes only. As discussed in the previous section, the evidence also suggests manufacturers are not incentivised to compete on efficiency by increasing the efficiency of the default picture mode.

Also, a recent CLASP study found that the label was missing online. So are the filtering tools that would help consumers search for the most energy efficient products. Reinforcing the obligations associated with the visualization of the energy label might motivate manufacturers to strive for more energy efficient products.

To address these issues, we call for more ambitious MEPS. This would be much more effective than decreasing the ambitiousness of the Energy Classes to artificially allow some non-energy efficient products to benefit from a better classification.

3. NEW METRICS TO ACCOUNT FOR DISPLAY PIXEL DENSITY

Pixel density is one of the key factors to determine energy efficiency. Unfortunately, this is only partially addressed through the EEI metric itself, which is non-linear with increasing screen size, and setting different EEI MEPS depending on the screen resolution. As a result, the stringency of the label is not uniform across different screen sizes and resolutions, with a tendency to be more accommodating with the higher power demanding technologies.
As the range of pixel densities increases with small 4K computer monitors and 8K TVs, the metric should be revised to maximise energy savings across all types of display.

4. ENERGY LABEL BASED PRIMARILY ON SDR VIDEO PLAYBACK

New research (unpublished) suggests that most consumers only check the label to be provided in the case of distance selling (as referred in Annex VIII of the energy labelling regulation) when purchasing online. They do not click the link to review the full energy label or information sheet and are therefore unaware of the HDR playback energy class.

Since HDR content is more readily available, particularly because of movie and series streaming services, and as HDR playback consumes more energy, the primary energy class should now include HDR playback. In addition, new TVs are developing increasingly sophisticated AI picture enhancements to improve colour, resolution, and dynamic range. This can make it possible to convert SDR content into realistic HDR further reducing the use of SDR picture modes.

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Updated labels and MEPS should be based primarily on the HDR playback power demand to reflect the continued trend towards viewing HDR only content.

IV. RESOURCE EFFICIENCY

1. PRICE OF SPARE PARTS

Transparency on the price of spare parts is not yet present in the ecodesign requirements and not mentioned in the call for evidence. However, two EU legislative texts suggest that this is possible. Annexes to the Regulation laying down ecodesign requirements for smartphones, mobile phones other than smartphones, cordless phones and slate tablets (Smartphone Regulation) provide that 'the manufacturers, importers or authorised representatives shall provide indicative pre-tax prices at least in euro for spare parts [available to professional repairers and end-users], including the pre-tax price of fasteners and tools, if supplied with the spare part, on the free access website of the manufacturer, importer or authorised representative' (e.g. Annex II.B.1.1.(4) for smartphones). Also, the provisional agreement resulting from interinstitutional negotiations on the Proposal for a Regulation concerning batteries and waste batteries (Battery Regulation), provides in article 11.5 that 'Any natural or legal person that places on the market products incorporating portable or LMT batteries shall ensure that batteries shall be available as spare parts of the equipment they power for a minimum of 5 years after placing the last unit of the model on the market, with a reasonable and non-discriminatory price for independent professionals and end users'. To maximise the share of end-users who repair rather than replace defective electronic displays, manufacturers must provide access to information on the maximum price of spare parts and ensure that the price of these parts does not exceed 30% of the price of the product when purchased new. This must be reflected in the proposed ecodesign requirements for electronic displays.

2. EXPECTED LIFETIME

Upon sale, consumers should have access to reliable information on the longevity and repairability of the products they buy. This would allow them to compare and potentially go for the most reliable products.
A horizontal standard now exists to inspire the development of durability testing methodologies for energy related products (EN45552:2020 - General method for the assessment of the durability of energy-related products). The ecodesign requirements for electronic displays must call for such a durability testing methodology to be developed by the European Standardisation Organisations. Once such a methodology is developed, manufacturers would be obliged to test the durability of their products and display the expected lifetime upon sale. Eventually, this methodology would also allow policy makers to set minimum lifetime requirements.

3. AVAILABILITY OF SPARE PARTS

The list of spare parts that are currently available to end-users and professional repairers should be available for at least 10 years and for everyone, not only professional repairers. In the case where a manufacturer would not be able to provide spare parts anymore, it would have to publish the technical specifications to allow for independent production.

In addition, in the current list of spare parts that manufacturers, importers or authorised representatives must make available to professional repairers and end-users, there is the notable absence of the screens themselves. This spare part should be added to the list of spare parts available for both professional repairers and end-users, and a standardisation process to facilitate their interoperability and, therefore, replaceability, should be investigated (as suggested later in II.9 COMMON COMPONENTS / STANDARDISATION).

4. BUNDLING OF SPARE PARTS

We believe that preventing the bundling of spare parts is missing from the current ecodesign regulation. Bundling some spare parts means that, instead of replacing a faulty part, repairers might be required to replace larger parts that might end up being costlier. In the Smartphones Regulation, the list of spare parts that should be accessible to professional repairers and end-users is protected against bundling. For smartphones, it is through Article B.1.1.(1).(b): "Spare parts [listed in a previous article] shall not be assemblies comprising more than one of the listed spare part types". We encourage the Commission to adopt the same approach for electronic displays.

5. REPLACEMENT OF SERIALISED PARTS

Serialised parts, sometimes leading to the part pairing practice, could create major barriers to independent and self-repair. Part-pairing describes the utilisation of software barriers implemented by electronics manufacturers with the intention of obstructing end-users and professional repairers from substituting components. The practice of sourcing spare parts from second-hand or waste devices to employ them in other recoverable devices has long been a vital aspect of the repair ecosystem, and its continuity is under threat due to the increasing prevalence of parts pairing.

As for the price of spare parts, provisions exist in the forthcoming Smartphones and Battery Regulations that should be used as a blueprint for electronic displays:

- Annex II.B.1.1.(4) in the Smartphone Regulation
- Article 11.7 in the Battery Regulation

Software techniques that prevent the replacement of spare parts, or the usage of third-party spare parts or consumables, must be banned.

6. DISMANTLING OF ELECTRONIC DISPLAYS INTEGRATED INTO OTHER PRODUCTS

Electronic displays are often integrated into other products. A horizontal requirement ensuring that these displays can always be replaced and safely removed from the products in which they are contained would be the opportunity to save on a significant number of strategic mineral resources such as copper, quartz, iron, gold, platinum, and silver. This would follow the strategy of the battery regulation where similar provisions have been negotiated by the co-legislator under Article 11.

7. BAN THE USE OF HALOGENATED FLAME RETARDANTS AND OTHER PROBLEMATIC SUBSTANCES

The use of halogenated flame retardants should be banned in all parts, not only for the enclosure and the stand as it is the case now. All flame retardants, not only halogenated FRs, must be banned as they do not provide any fire safety benefit and lead to health risks, especially for firefighters[2], and impede e-display reuse or recycling.

Besides the ban of halogenated flame retardants, the revision should look at fluoropolymers and PFAS in displays[3] to anticipate their universal phase out/ban. It should also consider the removal of dyes, pigments, additives that interfere with recycling, while also phasing out problematic polymers and plastics that are difficult to recycle[4].

8. REINFORCE THE RESOURCE EFFICIENCY PROVISIONS BY TARGETING EASIER REPAIR

Ease of access should target non-destructive disassembly rather than dismantling only. The same logic as for the recent Commission Regulation on smartphones, mobile phones other than smartphones, cordless phones and slate tablets (Smartphone Regulation) should be adopted for displays (eg. for smartphones - Annex II.B.1.1.(5)): fasteners shall be removable, resupplied or reusable and replacement of the parts shall be possible at least by a generalist in a workshop environment with commercially available tools.)

Moreover, on dismantling, the reference to WEEE results in key display parts not being addressed (e.g. PMMA boards and internal power supplies) and some display technologies neither (e.g. OLED). This reference should be removed.

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[2] Green Science Policy Institute – Electronics, Flame retardants in electronics casings do not provide a fire safety benefit – available here

[3] Chemsec (2023) - Check Your Tech: A guide to PFAS in electronics – available here

[4] UNEP (2023) - Turning off the Tap: How the world can end plastic pollution and create a circular economy – available here

9. COMMON COMPONENTS

Electronic displays must be designed so that certain parts are common across different models.

Already in 1999, researchers agreed that "Standardization reduces spare part costs, tooling, component identification complexity, and skill level required, and increases interchangeability of components during maintenance and repair"[5]. Standardisation is indeed essential to avoid early disposal and to allow a more efficient use of resources in electronic display. The use of standardised spare parts in different electronic displays also supports the long-term availability of these parts, so that replacement is ensured in the event of a defect. Common components should be developed as far as possible within manufacturers product lines, but also cross-manufacturers. Manufacturers should be motivated to use standardised parts and to publish technical specifications of their electronic displays:

- **Screen panels**: Screens panels are a good example of spare parts to be standardised as they are often already under identical specifications: "LCD screens with identical specifications often have different connectors and operate with different signals (number of leads, signal frequency, voltage). Even screens with identical dimensions, mounting means, and connectors may not be interchangeable. The same model of TV may be equipped with a different type of LCD, and the firmware may or may not be adaptable to another type"[6]. They are also prone to being accidentally broken and needing replacement. Allowing the end-user, repairer or refurbisher to compare price and quality of interoperable screens might therefore significantly improve the repair rate of electronic displays. This would also avoid unnecessary transportation costs and delivery time of proprietary parts from a long distance, as independent repairers/refurbishers could store or have facilitated access to standardised screens, sold new or recuperated from second-hand or waste electronic displays.
- **External power supplies**, as about to be experimented with for certain small electronic products thanks to the Common charger initiative, is also a good example of a spare part that could be standardised, together with the associated connectors.
- **Remote controls**: It would also make sense to make sure that all remote controls can be used to control all the electronic displays in scope. This would allow end-users to choose between buying a remote control or not when purchasing a new electronic display.

10. REINFORCE THE CLAUSE ON SOFTWARE UPDATES

Software updates should be available for 10 years instead of 8 and ensure the safe use of the electronic display without limiting its functionality. Otherwise the source code should be published.

In the current regulation, there is already a requirement that the power demand of the electronic displays should not increase after a software or firmware update when measured with the same test standard originally used for the declaration of conformity. However, the exception that this is allowed with the "explicit consent of the end-user" significantly weakens this requirement. In a STEP report[7], an increase in energy consumption of 31% to 37% was observed after software updates for three of the seven television models tested. We believe that prior to being asked to provide consent, the user shall be notified of a possible increase of energy use and in which circumstance or functionality that increase will occur before starting the update. The user should have the right to refuse an update. Furthermore, if the user disables energy saving functionality (either directly or indirectly, for example via a change in

[5] H.S.C Perera, Nagen Nagarur, Mario T Tabucanon, Component part standardization: A way to reduce the life-cycle costs of products, International Journal of Production Economics, Volumes 60–61, 1999, Pages 109-116, ISSN 0925-5273

[6] Ruud Balkenende, Jeremy Faludi, Sepp Eisenriegler, Harald Reichl, Julia Haas, Anna Neumerkel, Johannes Wild, Maarten Depypere, Thomas Opsomer, Premature Obsolescence Multi-Stakeholder Product Testing Program Deliverable 4.3: Design for physical durability, diagnosis, maintenance, and repair, p. 31.

[7] STEP (2017) – Closing the 'reality gap': ensuring a fair energy label for consumers – available here

picture settings), the user shall be informed of the resultant increase in energy usage, and it shall be possible for them to re-enable this functionality without a factory reset.

11. SUSTAINABLE AND RECYCLED MATERIALS IN THE PRODUCTION OF ELECTRONIC DISPLAYS

When possible, sustainable raw materials should be used for the production of electronic displays to reduce social and environmental impacts in mining countries. To achieve improvements in this matter, transparency is a crucial building block. All producers should reveal the materials they use, as well as their origin. This will hopefully be be achieved through the Digital Product Passport currently proposed by the Commission in its Ecodesign for Sustainable Products Regulation, currently under negotiation between the European Parliament and the Council of the European Union.

Usage of recycled material can considerably contribute to reducing the environmental impacts related to the extraction of minerals. In the proposed Critical Raw Materials Act, recycled content targets are about to be set for permanent magnets (for neodymium, dysprosium, praseodymium, terbium, boron, samarium, nickel and cobalt). The new Battery Regulation also adopts the same approach for battery materials (cobalt, lead, lithium and nickel). The same approach should be adopted for the electronic displays resource efficiency requirements: recycled content targets should be set for plastic, copper, quartz, iron, gold, platinum, and silver.

Recycled content targets are crucial to close material loops and improve the competitiveness of recycled materials. Also, to encourage the development of a healthier plastic recycling market, the use of substances of concern such as flame retardants must be banned for the manufacturing of consumer products such as electronic displays (see above). In any case, if recycled content objectives are set for electronic displays, recycled content must be measured with robust methodologies, as suggested by ECOS in the context of the Single- Use Plastic Directive (SUPD)[8]. Only then can trust and reliability be guaranteed for subsequent recycled content claims economic operators will make on e-displays.

Techniques such as pyrolysis and gasification should however not be accepted for calculation of recycled content[9]. These processes thermally decompose plastic waste into feedstock molecules. Therefore, they are chemical recovery processes for pre-treatment of plastic waste, not recycling processes.

12. REPAIR SCORING SYSTEM

The Commission should consistently incorporate a repair scoring system into all future and revised ecodesign requirements. This call for evidence suggests that the Commission will investigate a repair scoring system, as developed within the forthcoming Energy Label for mobile phones and tablets. Therefore, it is crucial to ensure that this approach is systematically applied when formulating new material efficiency ecodesign requirements.

For more information, please reach out to mathieu.rama@ecostandard.org

[8] ECOS – The implementing decision of the Single-Use Plastic Directive (SUPD) defining the methodology for recycled content – available here

[9] ECOS, Deutsche Umwelthilfe and Zero Waste Europe - Chemical Recycling and Recovery - Recommendation to Categorise Thermal Decomposition of Plastic Waste to Molecular Level Feedstock as Chemical Recovery – available here